

A New Species of *Sonorella*
(Gastropoda: Pulmonata: Helminthoglyptidae)
from Sonora, Mexico

by

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Abstract. A new species of *Sonorella* from Sonora, Mexico, is described, and a new locality for *Sonorella magdalenensis* is recorded.

INTRODUCTION

DURING THE PERIOD 1965 TO 1967, one of us (W.B.M.) conducted extensive explorations of northern Sonora in order to discover possible populations of *Sonorella* and to determine the southern limit of distribution of the genus (MILLER, 1965, 1967a, b). Subsequently, malacological investigations in Sonora were suspended until our interest was re-kindled in September 1983 when two students from the University of Arizona, Russell Duncan and Jennifer Titley, discovered a population of *Sonorella magdalenensis* (Stearns, 1890) along the Agua Fría river. In November 1984, we undertook an expedition to that locality, in the region of Rancho La Brisca, and we were able to obtain over two dozen live adult, active specimens. Examination of the reproductive systems determined that we were dealing with a mixture of two sympatric species, *Sonorella magdalenensis* (Stearns, 1890) and a new species described below.

DESCRIPTION

Family HELMINTHOGLYPTIDAE Pilsbry, 1939

Sonorella Pilsbry, 1900

Sonorella aguafriensis

Naranjo-García & Miller, spec. nov.

(Figures 1, 2)

Description of shell of holotype: Shell depressed, globose, heliciform, thin, glossy, light brown with a chestnut spiral band on the round shoulder, the umbilicus narrow, contained about 7 times in the diameter and about $\frac{1}{4}$ covered by the reflected columellar lip. First part of the embryonic shell smooth, followed by growth wrinkles and

hyphenlike papillae arranged in descending spiral threads over the growth wrinkles, for 1 to $1\frac{1}{2}$ whorls. Following whorls with growth wrinkles and rounded papillae, the latter gradually disappearing; the body whorl with radial growth wrinkles only. Body whorl descending to the oblique aperture which is ovate-lunate and wider than high; parietal callus thin; peristome slightly reflected (Figure 1).

Reproductive system: The upper part of the reproductive system is typical of the genus. The penis contains a short verge slightly narrower at its beginning than at its tip. The verge is somewhat undulated at the sides and terminates with a wide conical tip; it is slightly less than $\frac{1}{3}$ as long as the penis. A penial sheath covers the lower region of the penis. Epiphallus thin, the distal part as well as the epiphallic caecum enveloped by connective tissue attached to the penial sheath; the epiphallic caecum very short. Vagina approximately same length as the penis; the lower $\frac{2}{3}$ of the vagina wider than the upper $\frac{1}{3}$, becoming slender to the point of junction with the spermathecal duct (Figure 2).

Type locality: West bank of Río Agua Fría, Sonora, Mexico, about 1 km upstream from Rancho La Brisca installations, $30^{\circ}24.3'N$ and $110^{\circ}32.5'W$. The site is in a small canyon running north-south, with scattered volcanic rocks on the slope above the river. The vegetation is riparian with *Prosopis juliflora*, *Opuntia* sp., *Salix* sp., *Nicotiana glauca*, *Morus* sp., *Fraxinus velutina*, *Juglans major*, *Baccharis sarothroides*, and *Platanus wrightii*.

Disposition of types: Holotype: Santa Barbara Museum of Natural History No. SBMNH 34074. Paratypes: National Museum of Natural History, Smithsonian Insti-

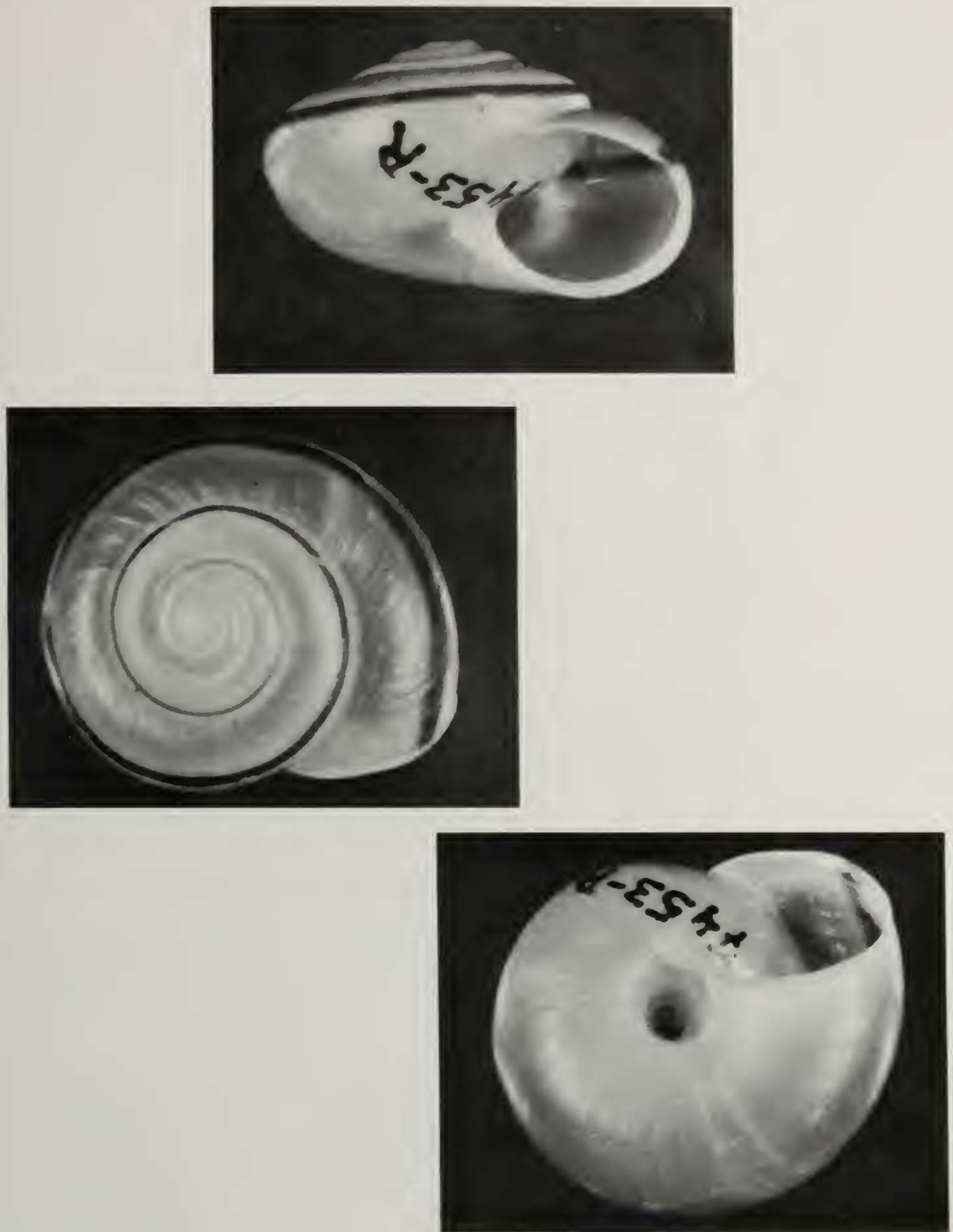


Figure 1

Sonorella aguafriensis Naranjo-García & Miller, spec. nov. Shell of holotype, SBMNH 34074. Top, apertural view; middle, apical view; bottom, umbilical view.

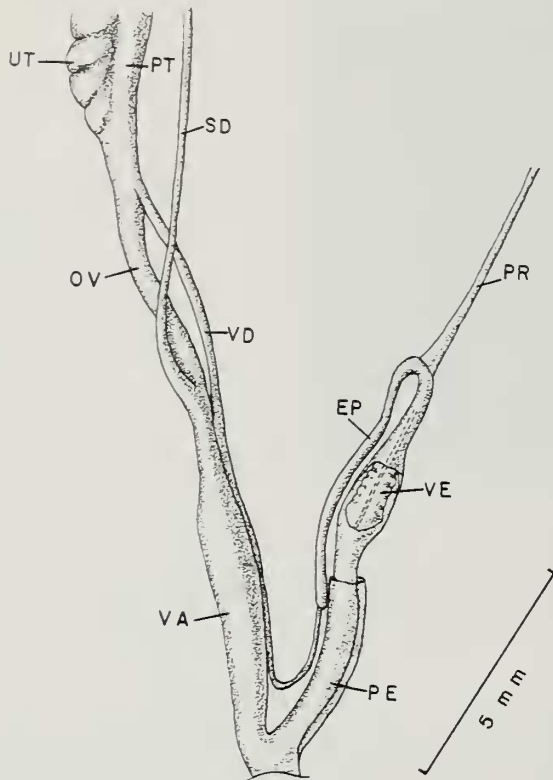


Figure 2

Lower reproductive system, *Sonorella agufriensis*, spec. nov. Holotype, SBMNH 34074. EP, epiphallus; OV, free oviduct; PE, penis; PR, penial retractor muscle; PT, prostate; SD, spermathecal duct; UT, uterus; VA, vagina; VD, vas deferens; VE, verge.

tution No. USNM 859003, Academy of Natural Sciences of Philadelphia No. ANSP 359974, Field Museum of Natural History No. FMNH 212879, University of Texas at El Paso No. UTEP 9384, Universidad Nacional Autónoma de México Colección Malacológica No. 1201, Edna Naranjo-García collection No. 408, Walter B. Miller collection No. 7453.

Etymology: This species is named after the river along which it lives, Río Agua Fría.

DISCUSSION

Sonorella agufriensis belongs to the *Sonorella binneyi* complex (BEQUAERT & MILLER, 1973:111); it is probably most closely related to *Sonorella sitiens sitiens* Pilsbry & Ferriss, 1915. The verge of *S. agufriensis* has the same general shape as that of *S. s. sitiens* but is consistently more slender (Figure 2). *Sonorella agufriensis* has a shorter spermathecal duct than *S. s. sitiens*; the vagina of *S. agufriensis* has a shape similar to that of *S. s. sitiens*, but the slender region is longer than in *S. s. sitiens*. In *S. agufriensis* the vagina and the penis are approximately of the same length, whereas in *S. s. sitiens* the vagina is shorter than the penis. The embryonic shell of *S. agufriensis* has a sculpture of growth wrinkles with superimposed papillae, whereas that of *S. s. sitiens* is smooth. The measurements of the 17 paratypes varied only slightly from those of the holotype, with the shell heights ranging from 8.2 to 9.3 mm with a mean of 8.8 mm, and the maximum diameter 15.0 to 16.8 mm with a mean of 15.7 mm. All of the embryonic shells have hyphenlike papillae descending as spiral threads over the growth wrinkles, although in some of them these threads become faint near the shoulder.

ACKNOWLEDGMENTS

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